

Comparison of electric and magnetic fields:

● Electric Fields:

- Electric charges **at rest** create an electric field \mathbf{E} .
- The electric field exerts a force $\mathbf{F}=q\mathbf{E}$ on any other charge q that is present in the field \mathbf{E} . Force \mathbf{F} and electric field \mathbf{E} are parallel.
- The electric field lines run from positive to negative charges.

● Magnetic fields:

- A **moving charge** or a current creates a magnetic field \mathbf{B} in the surrounding space, and also an electric field \mathbf{E} .
- The magnetic field exerts a force on any other moving charge ($\mathbf{F}=q\mathbf{v}\times\mathbf{B}$) or current ($\mathbf{F}=\mathbf{I}\times\mathbf{B}$) that is present in the field \mathbf{B} . Force, velocity, and field satisfy the **right-hand rule**.
- There is **no** magnetic force acting on a charge **at rest**.
- The magnetic field lines run from the N pole to the S pole.